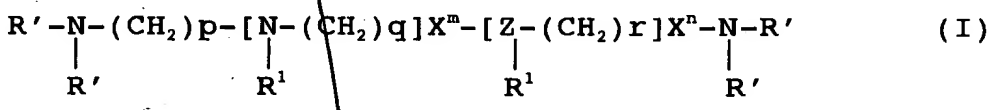
CLAIMS

1. A composition comprising a polyealkylenimine having two or more hydrophobic groups or its salt.

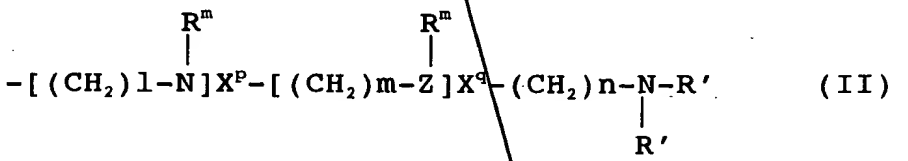
2. The composition of Claim 1, wherein the hydrophobic group is a cholesterol residue, a saturated or unsaturated alkyl group, a saturated or unsaturated acyl group, a saturated or unsaturated acyloxycarbonyl group, or a phospholipid residue.

3. The composition of Claim 1, wherein the polyalkylenimine having two or more hydrophobic groups is a compound represented by formula (I):



(I)

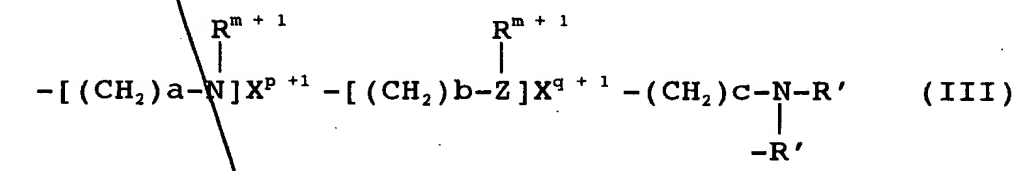
wherein the base skeleton may contain an amide bond; Z represents a carbon or nitrogen atom; R′ represents hydrogen, a cholesterol residue, a saturated or unsaturated alkyl group, a saturated or unsaturated acyl group, a saturated or unsaturated acyloxycarbonyl group, or a phospholipid residue; two R′s binding to the same nitrogen atom can be identical or different; a side chain R_1 is hydrogen, a cholesterol residue, saturated or unsaturated alkyl group, saturated or unsaturated acyl group, or saturated or unsaturated acyloxycarbonyl group, phospholipid residue, or below formula (II); and p, q, r, X^n, X^m represent arbitrary natural numbers:



(II)

wherein the base skeleton and the side chain R^m may contain an amide bond; Z represents a carbon or nitrogen atom; R′ represents hydrogen, a cholesterol residue, a saturated or unsaturated alkyl group, a saturated or unsaturated acyl group, a saturated or unsaturated acyloxycarbonyl group, or a phospholipid residue; two

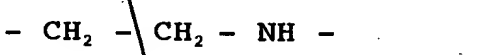
R's binding to the same nitrogen atom can be identical or different; R^m is hydrogen, a cholesterol residue, a saturated or unsaturated alkyl group, a saturated or unsaturated acyl group, or a saturated or unsaturated acyloxycarbonyl group, a phospholipid residue, or below formula (III); and l, m, n, X^p, X^q represent arbitrary natural numbers:



$$-[(CH_2)a-N]X^{p+1}-[(CH_2)b-Z]X^{q+1}-(CH_2)c-N(-R')-R' \qquad (III)$$

wherein the base skeleton and the base skeleton of the side chain R^{m+1} may contain an amide bond; Z represents a carbon or nitrogen atom; R' represents hydrogen, a cholesterol residue, a saturated or unsaturated alkyl group, a saturated or unsaturated acyl group, a saturated or unsaturated acyloxycarbonyl group, or a phospholipid residue; two R's binding to the same nitrogen atom can be identical or different; and a, b, c, X^{p+1}, X^{q+1} represent arbitrary natural numbers.

4. The composition of any one of Claims 1 to 3, comprising the repeating structure of formula (IV) in the base skeleton:



$$-CH_2-CH_2-NH- \qquad (IV).$$

5. The compositions of Claim 4, wherein two to five molecules of tetraethylenepentamine are linked in a linear manner.

6. The composition of Claim 5, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, nonadecyl, and eicocyl groups.

7. The composition of Claim 5, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of a butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl,

heptadecyl, and octadecyl groups.

8. The composition of Claim 4, wherein the structure containing the formula (IV) are linked in a branched manner.

9. The composition of Claim 8, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, nonadecyl, and eicocyl groups.

10. The composition of Claim 8, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, and octadecyl groups.

11. The composition of any one of Claims 1 to 3, wherein the base skeleton contains a spermine structure.

12. The composition of Claim 11, wherein two to five molecules of spermines are linked in a linear manner.

13. The composition of Claim 11, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, nonadecyl, and eicocyl groups.

14. The composition of Claim 11, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of a butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, and octadecyl groups.

15. The composition of Claim 11, wherein the spermine structure is linked in a branched manner.

16. The composition of Claim 14, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group consisting of ethyl, propyl, butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, nonadecyl, and eicocyl groups.

17. The composition of Claim 14, wherein any two or more of side chains R', R^1, R^m, or R^{m+1} comprise a group selected from the group

consisting of butyl, pentyl, hexyl, heptyl, octyl, nonyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, and octadecyl groups.

18. The composition of any one of Claims 1 to 17, further comprising phospholipid.

19. The composition of Claim 18, wherein the phospholipid is neutral or basic phospholipid.

20. The composition of Claim 19, wherein the phospholipid comprises phosphatidylethanolamine, or phosphatidylcholine skeleton.

21. The composition of Claim 20, wherein the phospholipid is dioleylphosphotidylethanolamine, or phosphotidylcholine.

22. A complex comprising a physiologically active substance comprising a negative charge and a composition of any one of Claims 1 to 21.

23. The complex of Claim 22, wherein the physiologically active substance comprising a negative charge is a nucleic acid or its derivative.

24. A method for introducing a physiologically active substance comprising a negative charge to cells, said method comprising a step of contacting the complex of Claim 22 or 23 with cells.

25. A kit for preparing the composition of any one of Claims 19 to 21, comprising phospholipid and a polyalkylenimine having two or more hydrophobic groups per molecule or its salt.

ADD A17

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